

Supplementary Table 1. Review of the cognitive data from Asian populations of PLWH

Region (years)	Data set & definition of cognitive impairment	Main findings
Southern India (2010-2013) [1]	69 PLWH and 67 HIV- Age: 37.4 years in PLWH; time since diagnosis: 5 years; Current CD4: 532 cells/uL; % Definition: Global deficit score ≥ 0.5	- prevalence of HAND: 33% in PLWH vs.13% in HIV-; $p < 0.01$). - Impaired function in the motor and speed of information processing domains.
Guangxi, China (2011) [2]	230 PLWH and 99 HIV- Age: 18 to 65 years; Current CD4: 60.3-71 cells/uL; time since diagnosis: 19.7 months Definition: Frascati criteria	- prevalence of HAND in PLWH: 37.39% (18.27% ANI, 18.87% MND, and 8.26% HAD)
Anhui and Yunnan, China(unremarked periods) [3]	308 PLWH Age: 36 years; Current CD4: 392 cells/uL; % detectable viral load: 76%; % not on cART: 63%; Hepatitis C: 91%; Definition: Global deficit score ≥ 0.5	- prevalence of HAND: 26.6%. - cognitive impairment was associated with AIDS ($p < 0.01$) but not with HIV genotype; worsened neurocognitive function were associated with lower CD4+ count, lower CD4+ nadir, and higher viral diversity .
Thailand (2011-2014) [4]	329 PLWH and 510 HIV- Age: 45.7 years; Current CD4 563 cells/uL; %; HIV RNA <40 copies/mL 92.77%; cART duration: 12.1 years; Definition: not by Frascati but by psychomotor tests SD	- 43% of PLWH : psychomotor impairment -age and lower income were independently associated with cognitive impairment.
Japan (2014-2016) [5]	728 PLWH Age: 45.6 years; Current CD4: 549.7 cells/uL; % Viral load <20 copies/mL: 86.5%; time since diagnosis: 91.4 months; cART duration: 81.7 months; Definition: Frascati criteria	- prevalence of HAND: 25.3% (13.5% ANI, 10.6% MND, 1.2% HAD) - risk factors: age (≥ 50 years) and incomplete virological suppression - current ART (protective factor) - executive and visuospatial functions showed better diagnostic accuracy for HAND than other tests

Indonesia (2017) ^[6]	85 PLWH Age: 38.53 years; Current CD4: 432.58 cells/uL; duration of cART: 37.5 months Definition: Montreal Cognitive Assessment (MoCA-INA) <26	- prevalence of cognitive impairment: 75.3% -MoCA-INA score had significant correlation with CD4 counts ($r=0.271$, $p=0.012$),
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HAND: HIV associated neurocognitive disorder; MoCA-INA: Montreal Cognitive Assessment-
Indonesian Version

Supplementary Table 2: Neuropsychological tests administered to study participants in the COBRA and NeuroAIDS studies

Domain	COBRA	NeuroAIDS
Attention	PASAT 3	K-WAIS Digit Span
	WAIS-III Letter-number sequencing	
Executive function	Trail Making Test-B	Trail Making Test-B
	Wisconsin CST	Wisconsin CST
		K-WAIS Similarity
Language	Category Fluency	K-WAIS Vocabulary
	Letter Fluency	
Memory	Rey Auditory Verbal Learning	K-Auditory Verbal Learning
	WMS-IV Visual Reproduction	K-Complex Figure Tests
Motor function	Grooved pegboard	Grooved pegboard
	Finger tapping	
Processing speed	Trail Making Test-A	Trail Making Test-A*
	WAIS-III Digit Symbol	K-WAIS Digit Symbol
	WAIS-III Symbol Search	
	Stroop colour-word test	

Supplementary Table 3: AUROC (95% CI) of individual neuropsychological tests to discriminate between individuals with and without cognitive impairment in COBRA and NeuroAIDS PLWH.

Domain	Neuropsychological test	Scoring system	AUROC (95% CI)	
			COBRA (n=134)	NeuroAIDS (n=194)
Attention	PASAT 3	Total correct summations	0.844 (0.785, 0.903)	N/A
	WAIS-III Letter-number sequencing	Total correct sequences	0.812 (0.751, 0.872)	N/A
	K-WAIS Digit Span		N/A	0.734 (0.647, 0.821)
Executive function	Trail Making Test-B	Total time to complete	0.876 (0.820, 0.933)	0.711 (0.624, 0.798)
	Wisconsin CST	Number of total errors	0.806 (0.714, 0.898)	0.742 (0.654, 0.829)
	Wisconsin CST	Number of perseverative errors	0.798 (0.710, 0.887)	0.696 (0.606, 0.786)
	Wisconsin CST	Number of perseverative responses	0.809 (0.726, 0.892)	N/A
	Wisconsin CST	Number of conceptual level responses	N/A	0.734 (0.647, 0.821)
	K-WAIS Similarity		N/A	0.700 (0.611, 0.790)
Language	Category Fluency	Total number of animals in 1 minute	0.823 (0.739, 0.908)	N/A
		Total number of occupations in 1 minute	0.807 (0.711, 0.904)	N/A
	Letter Fluency	Total number of words (1 min/3 letters)	0.675 (0.566, 0.783)	N/A
	K-WAIS Vocabulary		N/A	0.775 (0.706, 0.843)
Memory	Rey Auditory Verbal Learning	Total recalled words trials 1-5	0.723 (0.627, 0.819)	0.725 (0.654, 0.797)
	Rey Auditory Verbal Learning	Total words recalled	0.740 (0.641, 0.838)	0.732 (0.660, 0.803)
	WMS-IV Visual Reproduction	Immediate recall	0.729 (0.628, 0.830)	N/A
	WMS-IV Visual Reproduction	Delayed recall	0.764 (0.685, 0.843)	0.598 (0.512, 0.684)
	K-Complex Figure Tests	Copy	N/A	0.653 (0.564, 0.743)
	K-Complex Figure Tests	Immediate recall	N/A	0.726 (0.640, 0.813)
	K-Complex Figure Tests	Delayed recall	N/A	0.714 (0.626, 0.801)

Motor function	Grooved pegboard	Dominant hand: Time to complete	0.670 (0.569, 0.771)	0.781 (0.706, 0.856)
	Grooved pegboard	Non-dominant hand: Time to complete	0.695 (0.591, 0.799)	N/A
	Finger tapping	Dominant hand: Median number of taps	0.682 (0.577, 0.788)	N/A
	Finger tapping	Non-dominant hand: Median number of taps	0.601 (0.506, 0.697)	N/A
Processing speed	Trail Making Test-A	Time to complete	0.726 (0.627, 0.824)	0.730 (0.649, 0.811)
	WAIS-III Digit Symbol	Total correct symbols	0.815 (0.724, 0.906)	0.795 (0.731, 0.859)
	WAIS-III Symbol Search	Total correct symbols	0.743 (0.642, 0.843)	N/A
	Stroop colour-word test	Number of items completed	0.710 (0.638, 0.782)	N/A

References

1. Kamat R, McCutchan A, Kumarasamy N, Marcotte TD, Umlauf A, Selvamuthu P, et al. **Neurocognitive functioning among HIV-positive adults in southern India.** *Journal of neurovirology* 2017; 23(5):750-755.
2. Zhao T, Wei B, Long J, Tang X, Zhou M, Dang C. **Cognitive disorders in HIV-infected and AIDS patients in Guangxi, China.** *Journal of neurovirology* 2015; 21(1):32-42.
3. Krueger KR, Adeyemi O, Leurgans S, Shah RC, Jimenez AD, Ouellet L, et al. **Association of cognitive activity and neurocognitive function in blacks and whites with HIV.** *AIDS (London, England)* 2017; 31(3):437-441.
4. Do TC, Kerr SJ, Avihingsanon A, Suksawek S, Klungkang S, Channgam T, et al. **HIV-associated cognitive performance and psychomotor impairment in a Thai cohort on long-term cART.** *Journal of virus eradication* 2018; 4(1):41-47.
5. Kinai E, Komatsu K, Sakamoto M, Taniguchi T, Nakao A, Igari H, et al. **Association of age and time of disease with HIV-associated neurocognitive disorders: a Japanese nationwide multicenter study.** *Journal of neurovirology* 2017; 23(6):864-874.
6. Fitri FI, Rambe AS, Fitri A. **Correlation between Lymphocyte CD4 Count, Treatment Duration, Opportunistic Infection and Cognitive Function in Human Immunodeficiency Virus-Acquired Immunodeficiency Syndrome (HIV-AIDS) Patients.** *Open access Macedonian journal of medical sciences* 2018; 6(4):643-647.